

Automation & Control

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Excitation

Power Plant Management

Monitoring & Diagnosis

Protection

Synchronization

Turbine Controller

NEPTUN

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6 x 175 MW, Markersbach, Germany

System-based automation

State-of-the-art automation and control systems must guarantee simple and safe operation of a hydropower plant at all times. Typically, hydropower plants are operated either locally (with a unit control board for example) or remotely (central control room and/or dispatching center). In emergency situations, the system must ensure that the plant components affected are restored to a pre-defined, safe operating status. This requires a system that can be adapted easily to the existing plant and that can also be split into independent functional components. The integrated control system for these functional components must take account of the primary systems (generating set, dam, and so on) and also the operational regulations.

All process signals should be received and managed without requiring multiple inputs. In order to enable efficient short and long range communication, as well as facilitate future expansion, it is essential to apply international standards here. Costs must be reduced to a minimum by using one hardware platform and thus reducing spare part inventory, and by applying integrated functions to keep maintenance and service activities to a minimum. Step-by-step expansion and integration of additional plant sections (switchyard or station service, for example) should always be an easy, straightforward task.



2 x 8 MW, Bischofshofen, Austria



6 x 130 MW, Kárahnjúkar, Iceland

Strategic products

SICAM 1703 ACP

The SICAM 1703 ACP automation and control system features innovative system concepts, 32-bit multiprocessor technology, efficient communication, and a uniform engineering tool. The system is excellently suited to both decentralized and centralized concepts due its optimized mechanical designs, adapted number of signals, and direct process interfaces. At the same time, extreme climatic and electromagnetic conditions can be mastered easily.

HyNET

Reliable communication is guaranteed by the HyNET product line. This product links all components inside the plant and between power plants. Special concepts tailored to the complete plant can be implemented with the latest LAN/WAN technologies or using conventional forms of communication.

250 SCALA

The 250 SCALA product line provides all the features of a modern SCADA system for monitoring and control of the entire technological process. Integrated scalability for the full spectrum of applications – from local control units to central control centers – and ergonomic operating concepts guarantee safe process control at all times.

TOOLBOX II

The TOOLBOX II product line provides optimum support for project management and service personnel by using the very latest software, particularly for decentralized configurations.

The main focus here lies on efficient concepts for data management, integrated project management, and comprehensive system diagnosis.

The logical and control applications are compiled in TOOLBOX II with CAEx plus. This efficient tool satisfies every need with its fully graphical interface and intuitive operations, requiring only brief job training and minimizing the amount of instruction required.



Product range



The comprehensive solution

Examples of autonomous functional areas

The functional areas are defined according to structural conditions and also primary systems (generating set, dam, switchyard, and so on), thus increasing the availability of the overall plant. In normal operation, these functional areas control and monitor the respective plant component reliably. In emergencies, they are responsible for restoring the component to a safe operating status.

“Unit control board” functional area

In addition to the layout selected (compact or decentralized and redundant), availability of the functional area can be increased further by splitting into functional islands (for example automation or mechanical protection). Direct process and transformer signal interfaces (binary 220VDC; transformer 220VAC, 5A) eliminate the need and the substantial costs for a further interface layer. Modern touch screens are the standard solution for local operation.

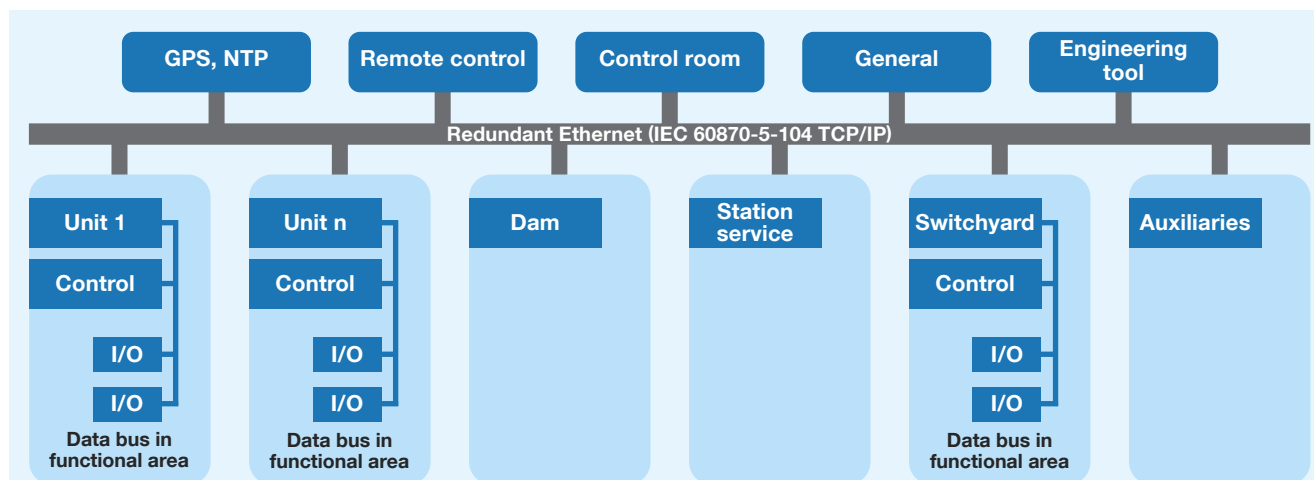
“Central control room” functional area

The SCADA system can be configured as a compact or a redundant multi-user system. Drawing on our many years of project experience, we can easily adapt our standards to your operational requirements (process displays, user guidance, alarm alerts, reporting, ...).

“Switchyard” functional area

The switchyard is automated on the basis of the centralized or decentralized configurations, using the same hardware platform as the unit control board.

System design



Your benefit

Optimal use:

- with the latest monitoring and control concepts
- through flexibility and step-by-step expansion
- by applying international standards
- with system software featuring integrated self-diagnostics
- through variable redundancy concepts

Reduced costs:

- by using central data management with a comprehensive engineering tool
- through direct process interfacing without intermediate terminals
- with remote diagnosis and parameter assignment
- by having fewer different spare parts

Increased earnings:

- through process-oriented, integrated control functions
- with fewer maintenance and service assignments on site

NEPTUN – the comprehensive solution for secondary systems can offer additional notable advantages in step-by-step expansion of your plant.

This gives you integrated advantages in addition to the current benefits of your automation system if additional components are used (for example excitation, protection, turbine controller).

- Efficient communication standard (IEC 60870-5-104)
- Comprehensive system concepts for remote functions
- Central engineering toolkit
- Simplified plant configuration
- Less engineering and documentation required
- Minimum of additional infrastructure for signal communication
- Minimum of spare parts required
- Liquidation of previously tied capital
- Fewer maintenance and service assignments on site



NEPTUN



www.andritz.com/NEPTUN

ANDRITZ HYDRO GmbH
Penzinger Strasse 76
1141 Vienna, P.O.B. 5, Austria
Phone: +43 (1) 89100
Fax: +43 (1) 8946046
e-mail: contact-hydro@andritz.com